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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/759,333	01/16/2004	Chenkang David Chen	Halliburton-135/US	7470

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Hugh R. Kress
Suite 1800
5718 Westheimer
Houston, TX 77057

EXAMINER	
TAYLOR, VICTOR J	

ART UNIT	PAPER NUMBER
2863	

DATE MAILED: 03/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/759,333	CHEN ET AL.	
	Examiner	Art Unit	
	Victor J. Taylor	2863	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 January 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) *1-18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *16 January 2004* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *09 February 2006*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☒ Other: *Office Action*.

DETAILED ACTION

Drawings

1. The drawings are objected to because of improper character of lines numbers and letters under 37 CFR 1.84 (l) and (m) as found on the attached notice of drawing review on USPTO form 948 attached to this office action. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement-drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Please note that each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the examiner does not accept the changes, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

2. Claims 1-18 are objected to because of the following informalities:

The use of the term for "real-time" sensor data in the claim structure to define the measured data obtained by the sensors during the drilling operation is not clear in the instant application. It is not clear as to just where and/or when the real-time data is detected or obtained or if the detections of the sensor data occur during the real-time when the drill string "is stopped" or whether the sensor data is detected while the drill string "is turning". Appropriate correction is required.

Prior Art

3. The prior art made of record and not relied upon is considered pertinent to the applicant.

I. MacDonald in US 6,732,052 in class 702/6 is cited for the method and apparatus for drilling prediction control using a drilling system rig with downhole analyzer sensors on the BHA to control the drilling dynamics using the control data parameters to control the drill 10 and drill the formation in figure 2 and discloses the workstation operated by the operator in figure 6-B to control drilling parameters and optimize the drilling of the earth formation by controlling the bit bounce and the torque shocks and the stick-slip and the forward and backward whirl of the drill string using the drilling control panel 600 in figure 6-B and discloses the sensors in lines 25-65 of column 3 that discloses and encamp the boundaries of the limitations found in claims 1, 7 and 13 that of obtaining sensor data and performing analysis of sensor data using the neural computation in figure 1-A and presenting to the operator a display of real-time operator adjusted parameters in figure 6-B. With regards to the real-time sensor data,

He discloses the sensors on the downhole BHA S1-S6 collected data during the real-time of drilling the borehole and in lines 25-50 of column 8.

II. Kriiger in US 5,224,201 in class 388/809 is cited for the method and apparatus for measuring rotary speed of a motor using sensor signals a high pass filter and spectrum analyzer with signal processes and computations of signal data to control the RPM speed of a machine 8 in figure 2 in real-time while the machine is running.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> (b) The invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-18 are rejected under 35 U.S.C. 102(b) as being anticipated by Harrel in US Patent 5,842,149.

With regard to claim 1, 7, and 13, Harrel discloses the apparatus system and method for controlling a drilling operation 10 using the operator operated control panel work station 42 in figure 8-A for controlling the closed loop controlled drill string 90 in figure 1 and discloses the orthogonal accelometers with the computation and signal conditioner equipment in figure 5 in combination with the drilling operations in lines 5-20 column 6.

In additional He discloses the claimed limitations for,

1-A, the limitation for "obtaining the real time sensor data regarding at least one dynamic operational parameter of said bottom hole assembly" 90 disclosed in figure 1

and discloses the rotation drilling of the hole with the sensors thereby obtaining the data during rotation, hence the real-time rotation data and look in lines 1-20 of column 8. He discloses the limitation for regarding "at least one dynamic operational parameter" in line 1-5 of column 8, see the sensor and the processed signals to the control unit 40 with the display for at least one parameter of bit bounce in figure 8-A.

7-A, the " sensor" limitation in 7-a, He discloses the X-Y-Z Accelometers 414, and the sensor in figure 5 in detail with the associated signal conditioning equipment.

13-A, the "sensor" limitation in 13-a to include the "at least one dynamic operational parameter", look in line 1-5 of column 8 and see the sensor and the processed signals to the control unit 40 with the display for "at least one parameter" of bit bounce in figure 8-A using the operator work display and station.

As to claim limitations,

1-B, the limitation for "performing the real-time analysis of said sensor data to calculate at least one dynamic critical value of an operator-adjusted operational parameter of said bottom hole assembly" 90 disclosed in figure 1 and discloses the rotation drilling of the hole with the sensors thereby obtaining the data during rotation, hence the real-time rotation data and look in lines 1-20 of column 8. He discloses the limitation for regarding "operator-adjustable operational parameter" using the operator work station 750 in figure 8-a" and in line 1-5 of column 8, see the sensor and the processed signals to the control unit 40 with the display for at least one parameter of bit bounce in figure 8-A.

As to claim limitations,

7-B, the limitation for "performing a dynamics analysis application for performing real-time analysis of said sensor data and calculate at least one dynamic critical value of an operator-adjusted operational parameter of said bottom hole assembly" 90 disclosed in figure 1 using the processors 870 to process the measured parameters 850 and display and provide input control of the BHA in figure 10 and discloses the rotation drilling of the hole with the sensors thereby obtaining the data during rotation, hence the real-time rotation data and look in lines 1-20 of column 8. He discloses the limitation for regarding "operator-adjustable operational parameter" using the operator work station 750 in figure 8-a" and in line 1-5 of column 8, see the sensor and the processed signals to the control unit 40 with the display for at least one parameter of bit bounce figure 8-A.

As to claim limitations,

13-B, the limitation for "performing a dynamics analysis application for performing real-time analysis of said sensor data and calculate at least one dynamic critical value of an operator-adjusted operational parameter of said bottom hole assembly" 90 disclosed in figure 1 using the processors 870 to process the measured parameters 850 and display and provide input control of the BHA in figure 10 and discloses the rotation drilling of the hole with the sensors thereby obtaining the data during rotation, hence the real-time rotation data and look in lines 1-20 of column 8. He discloses the limitation for regarding "operator-adjustable operational parameter" using the operator work station 750 in figure 8-a" and in line 1-5 of column 8, see the sensor and the processed signals to the control unit 40 with the display for at least one parameter of bit bounce figure 8-A.

As to claim limitations,

1-C, the limitation for "presenting to an operator a display of the real time value of said operator adjustable operational parameter over time along with the real time value of said at least one dynamic critical value of said operator adjusted operational" is disclosed in the computer computations of real time sensor data processed by the processors 870 in figure 10 and displayed to the operator using the control work station750 in figure 8-a and look in lines 1-20 of column 8 and see the whirl diagnosis from the computation of data 600 in figure 7. By using data processed by the controller 220 in line 50 of column 14, He discloses the limitation for regarding "at least one dynamic critical value". Look in line 1-5 of column 8, and see the sensor and the processed signals to the control unit 40 with the display for at least one parameter of bit bounce in figure 8-A.

As to claim limitations,

7-C, the display apparatus limitation found in 7-c, "presenting to an operator a display of the real time value of said operator adjustable operational parameter over time along with the real time value of said at least one dynamic critical value of said operator adjusted operational" is disclosed in the computer computations of real time sensor data processed by the processors 870 in figure 10 and displayed to the operator using the control work station750 in figure 8-a and look in lines 1-20 of column 8 and see the whirl diagnosis from the computation of data 600 in figure 7. By using data processed by the controller 220 in line 50 of column 14, He discloses the limitation for regarding "at least one dynamic critical value". Look in line 1-5 of column 8, and see the

sensor and the processed signals to the control unit 40 with the display for at least one parameter of bit bounce in figure 8-A.

As to claim limitations,

13-C, the display for presenting limitation found in 13-c, "presenting to an operator a display of the real time value of said operator adjustable operational parameter over time along with the real time value of said at least one dynamic critical value of said operator adjusted operational" is disclosed in the computer computations of real time sensor data processed by the processors 870 in figure 10 and displayed to the operator using the control work station750 in figure 8-a and look in lines 1-20 of column 8 and see the whirl diagnosis from the computation of data 600 in figure 7. By using data processed by the controller 220 in line 50 of column 14, He discloses the limitation for regarding "at least one dynamic critical value". Look in line 1-5 of column 8, and see the sensor and the processed signals to the control unit 40 with the display for at least one parameter of bit bounce in figure 8-A.

As to claims 2, 8, and 14, the arguments applied to claims 1, 7, and 13 are applied to claims 2, 8, and 14 for their common features.

Harrel discloses the apparatus, system, and method for controlling a drilling operation 10 and discloses the means for an operator to adjust the values using the computer 870 in figure 10 and the display control unit 750 found in figure 8-A

As to claims 3, 9, and 15, the arguments applied to claims 1, 7, and 13 are applied to claims 3, 9, and 15 for their common features.

Harrel discloses the apparatus, system, and method for controlling a drilling operation 10 and discloses the means for an operator to adjust the rotation speed 758 using the computer 870 in figure 10 and the display control unit 750 found in figure 8-A to adjust the bit RPM in figure 8-A

As to claims 4, 10, and 16, the arguments applied to claims 1, 7, and 13 are applied to claims 4, 10, and 16 for their common features.

Harrel discloses the apparatus, system, and method for controlling a drilling operation 10 and discloses the means for an operator to monitor the lateral vibration 752 using the computer 870 in figure 10 and the display control unit 750 found in figure 8-A to adjust the bit RPM in figure 8-A

As to claims 5, 11, and 17, the arguments applied to claims 1, 7, and 13 are applied to claims 5, 11, and 17 for their common features.

Harrel discloses the apparatus, system, and method for controlling a drilling operation 10 and discloses the means for an operator to monitor the lateral vibration 752 using the computer 870 in figure 10 and the display control unit 750 found in figure 8-A in figure 8-A and discloses the X, Y, Z accelometers 414 in figure 5 mounted on the BHA of figure 1.

As to claims 6, 12, and 18, the arguments applied to claims 1, 7, and 13 are applied to claims 6, 12, and 18 for their common features.

Harrel discloses the apparatus, system, and method for controlling a drilling operation 10 and discloses the means for an operator to monitor the lateral vibration 752 using the computer 870 in figure 10 and the display control unit 750 found in figure

8-A to adjust the bit RPM in figure 8-A and discloses the X, Y, Z accelometers used to measure wobble another parameter of drill string response in figure 5.

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Victor J. Taylor whose telephone number is 703-305-4470 or direct fax for amendment after office action 703-746-4509. The examiner can normally be reached on 8:00 to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John E. Barlow can be reached on 703-308-3126. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-306-3431.

VJ Taylor
2/23/2006.

John Barlow
Supervisory Patent Examiner
Technology Center 2800